National Institute of Environmental Health Sciences

Projected burden of disease for Salmonella infection due to increased temperature in Australian temperate and subtropical regions

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Abstract:

OBJECTIVE: This study aimed to project the future disability burden of Salmonella infection associated with increased temperature in future in temperate and subtropical regions of Australia in order to provide recommendations for public health policy to respond to climate change. METHODS: Years Lost due to Disabilities (YLDs) were used as the measure of the burden of disease in this study. Regions in temperate and subtropical Australia were selected for this study. Future temperature change scenarios in the study were based on Australian projections, developed by the Commonwealth Scientific and Industrial Research Organization (CSIRO). YLDs for Salmonella infection in 2000 were calculated as the baseline data. YLDs for Salmonella infection in 2030 and 2050 under future temperature change scenarios were projected based on the quantitative relationship between temperature and disease examined in previously published regression models. Future demographic change was also considered in this analysis. RESULTS: Compared with the YLDs in 2000, increasing temperature and demographic changes may lead to a 9%-48% increase in the YLDs for Salmonella infection by 2030 and a 31%-87% increase by 2050 in the temperate region, and a 51%-100% increase by 2030 and an 87%-143% increase by 2050 in the subtropical region, if other factors remain constant. CONCLUSION: Temperature-related health burden of Salmonella infection in Australia may increase in the future due to change in climate and demography in the absence of effective public health interventions. Relevant public health strategies should be developed at an early stage to prevent and reduce the health burden of climate change.

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Resource Description

Exposure : ☑

weather or climate related pathway by which climate change affects health

Food/Water Quality

Food/Water Quality: Pathogen

Geographic Feature: ☑

resource focuses on specific type of geography

Urban, Other Geographical Feature

Other Geographical Feature : Subtropical

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Australasia

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease: Salmonellosis

Medical Community Engagement: ☑

resource focus on how the medical community discusses or acts to address health impacts of climate change

A focus of content

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Children

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Long-Term (>50 years)

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content